

SEQUENCE LISTING

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<120> NOVEL MOTOR PROTEINS AND METHODS FOR THEIR USE

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<140> US 09/883096

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<160> 6

<170> PatentIn Ver. 2.1

<210> 1

<211> 4108

<212> DNA

<213> Artificial Sequence

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<223> Nucleic acid sequence of human kinesin motor protein gene HsKip3a (Figure 1).

<220>

<223> Description of Artificial Sequence: HsKip3a gene.

<400> 1

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<210> 2

<211> 864

<212> PRT

<213> Artificial Sequence

<220>

<223> Amino acid sequence encoded by human kinesin motor protein gene HsKip3a (Figure 1).

<220>

<223> Description of Artificial Sequence: Amino acid sequence of HsKip3a.

<400> 2

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Pro	Thr	Pro	Arg	Glu	Leu	Asp	Ser	Gln	Arg	Arg	Pro	Val	Val	Gln	Val	20	25	30	
Val	Asp	Glu	Arg	Val	Leu	Val	Phe	Asn	Pro	Glu	Glu	Pro	Asp	Gly	Gly	35	40	45	
Phe	Pro	Gly	Leu	Lys	Trp	Gly	Gly	Thr	His	Asp	Gly	Pro	Lys	Lys	Lys	50	55	60	
Gly	Lys	Asp	Leu	Thr	Phe	Val	Phe	Asp	Arg	Val	Phe	Gly	Glu	Ala	Ala	65	70	75	80
Thr	Gln	Gln	Asp	Val	Phe	Gln	His	Thr	Thr	His	Ser	Val	Leu	Asp	Ser	85	90	95	
Phe	Leu	Gln	Gly	Tyr	Asn	Cys	Ser	Val	Phe	Ala	Tyr	Gly	Ala	Thr	Gly	100	105	110	
Ala	Gly	Lys	Thr	His	Thr	Met	Leu	Gly	Arg	Glu	Gly	Asp	Pro	Gly	Ile	115	120	125	
Met	Tyr	Leu	Thr	Thr	Val	Glu	Leu	Tyr	Arg	Arg	Leu	Glu	Ala	Arg	Gln	130	135	140	
Gln	Glu	Lys	His	Phe	Glu	Val	Leu	Ile	Ser	Tyr	Gln	Glu	Val	Tyr	Asn	145	150	155	160
Glu	Gln	Ile	His	Asp	Leu	Leu	Glu	Pro	Lys	Gly	Pro	Leu	Ala	Ile	Arg	165	170	175	
Glu	Asp	Pro	Asp	Lys	Gly	Val	Val	Val	Gln	Gly	Leu	Ser	Phe	His	Gln	180	185	190	
Pro	Ala	Ser	Ala	Glu	Gln	Leu	Leu	Glu	Ile	Leu	Thr	Arg	Gly	Asn	Arg	195	200	205	
Asn	Arg	Thr	Gln	His	Pro	Thr	Asp	Ala	Asn	Ala	Thr	Ser	Ser	Arg	Ser	210	215	220	
His	Ala	Ile	Phe	Gln	Ile	Phe	Val	Lys	Gln	Gln	Asp	Arg	Val	Pro	Gly	225	230	235	240
Leu	Thr	Gln	Ala	Val	Gln	Val	Ala	Lys	Met	Ser	Leu	Ile	Asp	Leu	Ala	245	250	255	
Gly	Ser	Glu	Arg	Ala	Ser	Ser	Thr	His	Ala	Lys	Gly	Glu	Arg	Leu	Arg	260	265	270	
Glu	Gly	Ala	Asn	Ile	Asn	Arg	Ser	Leu	Leu	Ala	Leu	Ile	Asn	Val	Leu	275	280	285	
Asn	Ala	Leu	Ala	Asp	Ala	Lys	Gly	Arg	Lys	Thr	His	Val	Pro	Tyr	Arg	290	295	300	
Asp	Ser	Lys	Leu	Thr	Arg	Leu	Leu	Lys	Asp	Ser	Leu	Gly	Gly	Asn	Cys	305	310	315	320

Arg	Thr	Val	Met	Ile	Ala	Ala	Ile	Ser	Pro	Ser	Ser	Leu	Thr	Tyr	Glu	
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Asp	Thr	Tyr	Asn	Thr	Leu	Lys	Tyr	Ala	Asp	Arg	Ala	Lys	Glu	Ile	Arg	
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Leu	Ser	Leu	Lys	Ser	Asn	Val	Thr	Ser	Leu	Asp	Cys	His	Ile	Ser	Gln	
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Tyr	Ala	Thr	Ile	Cys	Gln	Gln	Leu	Gln	Ala	Glu	Val	Ala	Ala	Leu	Arg	
	370					375					380					
Lys	Lys	Leu	Gln	Val	Tyr	Glu	Gly	Gly	Gly	Gln	Pro	Pro	Pro	Gln	Asp	
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Gln	Val	Glu	Arg	Ala	Met	Glu	Gly	Asn	Ser	Ser	Asp	Gln	Glu	Gln	Ser	
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Pro	Glu	Asp	Glu	Asp	Glu	Gly	Pro	Ala	Glu	Glu	Val	Pro	Thr	Gln	Met	
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Ile	Thr	Glu	Phe	Glu	Thr	Leu	Gln	Gln	Leu	Val	Gln	Glu	Glu	Lys	Ile	
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Glu	Pro	Gly	Ala	Glu	Ala	Leu	Arg	Thr	Ser	Gly	Leu	Ala	Arg	Gly	Ala	
			565						570					575		
Pro	Leu	Ala	Gln	Glu	Leu	Cys	Ser	Glu	Ser	Ile	Pro	Val	Pro	Ser	Pro	
			580					585					590			
Leu	Cys	Pro	Glu	Pro	Pro	Gly	Tyr	Thr	Gly	Pro	Val	Thr	Arg	Thr	Met	
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Ala	Arg	Arg	Leu	Ser	Gly	Pro	Leu	His	Thr	Leu	Gly	Ile	Pro	Pro	Gly	
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Arg Arg Arg Pro Ser Ala Leu Glu Ala Asp Ser Pro Met Ala Ser Lys
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 Arg Gly Thr Lys Arg Gln Arg Gln Ser Phe Leu Pro Cys Leu Arg Arg
 660 665 670
 Gly Ser Leu Pro Asp Thr Gln Pro Ser Gln Gly Pro Ser Thr Pro Lys
 675 680 685
 Gly Glu Arg Ala Ser Ser Pro Cys His Ser Pro Arg Val Cys Pro Ala
 690 695 700
 Thr Val Ile Lys Ser Arg Val Pro Leu Gly Pro Ser Ala Met Gln Asn
 705 710 715 720
 Cys Ser Thr Pro Leu Ala Leu Pro Thr Arg Asp Leu Asn Ala Thr Phe
 725 730 735
 Asp Leu Ser Glu Glu Pro Pro Ser Lys Pro Ser Phe His Glu Cys Ile
 740 745 750
 Gly Trp Asp Lys Ile Pro Gln Glu Leu Ser Arg Leu Asp Gln Pro Phe
 755 760 765
 Ile Pro Arg Ala Pro Val Pro Leu Phe Thr Met Lys Gly Pro Lys Pro
 770 775 780
 Thr Ser Ser Leu Pro Gly Thr Ser Ala Cys Lys Lys Lys Arg Val Ala
 785 790 795 800
 Ser Ser Ser Val Ser His Gly Arg Ser Arg Ile Ala Arg Leu Pro Ser
 805 810 815
 Ser Thr Leu Lys Arg Pro Ala Gly Pro Leu Val Leu Pro Glu Leu Pro
 820 825 830
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<210> 3

<211> 1014

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: HsKip3a
fragment

<220>

<223> Nucleotide sequence encoding motor domain fragment
of HsKip3a (Figure 2).

<400> 3

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<210> 4

<211> 338

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: HsKip3a fragment.

<220>

<223> Amino acid sequence of the motor domain fragment
of HsKip3a (Figure 3).

<400> 4

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Asp Ser Thr Leu Gln Val Val Val Arg Val Arg Pro Pro Thr Pro Arg
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Glu Leu Asp Ser Gln Arg Arg Pro Val Val Gln Val Val Asp Glu Arg
      20              25              30

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```

Val Leu Val Phe Asn Pro Glu Glu Pro Asp Gly Gly Phe Pro Gly Leu
      35              40              45

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```

Lys Trp Gly Gly Thr His Asp Gly Pro Lys Lys Lys Gly Lys Asp Leu
      50              55              60

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```

Thr Phe Val Phe Asp Arg Val Phe Gly Glu Ala Ala Thr Gln Gln Asp
      65              70              75              80

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Val Phe Gln His Thr Thr His Ser Val Leu Asp Ser Phe Leu Gln Gly
      85              90              95

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```

Tyr Asn Cys Ser Val Phe Ala Tyr Gly Ala Thr Gly Ala Gly Lys Thr
      100              105              110

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His Thr Met Leu Gly Arg Glu Gly Asp Pro Gly Ile Met Tyr Leu Thr
      115              120              125

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```

Thr Val Glu Leu Tyr Arg Arg Leu Glu Ala Arg Gln Gln Glu Lys His
      130              135              140

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```

Phe Glu Val Leu Ile Ser Tyr Gln Glu Val Tyr Asn Glu Gln Ile His
      145              150              155              160

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 165 170 175
 Lys Gly Val Val Val Gln Gly Leu Ser Phe His Gln Pro Ala Ser Ala
 180 185 190
 Glu Gln Leu Leu Glu Ile Leu Thr Arg Gly Asn Arg Asn Arg Thr Gln
 195 200 205
 His Pro Thr Asp Ala Asn Ala Thr Ser Ser Arg Ser His Ala Ile Phe
 210 215 220
 Gln Ile Phe Val Lys Gln Gln Asp Arg Val Pro Gly Leu Thr Gln Ala
 225 230 235 240
 Val Gln Val Ala Lys Met Ser Leu Ile Asp Leu Ala Gly Ser Glu Arg
 245 250 255
 Ala Ser Ser Thr His Ala Lys Gly Glu Arg Leu Arg Glu Gly Ala Asn
 260 265 270
 Ile Asn Arg Ser Leu Leu Ala Leu Ile Asn Val Leu Asn Ala Leu Ala
 275 280 285
 Asp Ala Lys Gly Arg Lys Thr His Val Pro Tyr Arg Asp Ser Lys Leu
 290 295 300
 Thr Arg Leu Leu Lys Asp Ser Leu Gly Gly Asn Cys Arg Thr Val Met
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 Ile Ala Ala Ile Ser Pro Ser Ser Leu Thr Tyr Glu Asp Thr Tyr Asn
 325 330 335
 Thr Leu

<210> 5

<211> 383

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: HsKip3a fragment

<220>

<223> Amino acid sequence of HsKip3a fragment used in the ATPase assay (Figure 4).

<400> 5

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Pro Thr Pro Arg Glu Leu Asp Ser Gln Arg Arg Pro Val Val Gln Val
 20 25 30

Val Asp Glu Arg Val Leu Val Phe Asn Pro Glu Glu Pro Asp Gly Gly
 35 40 45

Phe Pro Gly Leu Lys Trp Gly Gly Thr His Asp Gly Pro Lys Lys Lys
 50 55 60
 Gly Lys Asp Leu Thr Phe Val Phe Asp Arg Val Phe Gly Glu Ala Ala
 65 70 75 80
 Thr Gln Gln Asp Val Phe Gln His Thr Thr His Ser Val Leu Asp Ser
 85 90 95
 Phe Leu Gln Gly Tyr Asn Cys Ser Val Phe Ala Tyr Gly Ala Thr Gly
 100 105 110
 Ala Gly Lys Thr His Thr Met Leu Gly Arg Glu Gly Asp Pro Gly Ile
 115 120 125
 Met Tyr Leu Thr Thr Val Glu Leu Tyr Arg Arg Leu Glu Ala Arg Gln
 130 135 140
 Gln Glu Lys His Phe Glu Val Leu Ile Ser Tyr Gln Glu Val Tyr Asn
 145 150 155 160
 Glu Gln Ile His Asp Leu Leu Glu Pro Lys Gly Pro Leu Ala Ile Arg
 165 170 175
 Glu Asp Pro Asp Lys Gly Val Val Val Gln Gly Leu Ser Phe His Gln
 180 185 190
 Pro Ala Ser Ala Glu Gln Leu Leu Glu Ile Leu Thr Arg Gly Asn Arg
 195 200 205
 Asn Arg Thr Gln His Pro Thr Asp Ala Asn Ala Thr Ser Ser Arg Ser
 210 215 220
 His Ala Ile Phe Gln Ile Phe Val Lys Gln Gln Asp Arg Val Pro Gly
 225 230 235 240
 Leu Thr Gln Ala Val Gln Val Ala Lys Met Ser Leu Ile Asp Leu Ala
 245 250 255
 Gly Ser Glu Arg Ala Ser Ser Thr His Ala Lys Gly Glu Arg Leu Arg
 260 265 270
 Glu Gly Ala Asn Ile Asn Arg Ser Leu Leu Ala Leu Ile Asn Val Leu
 275 280 285
 Asn Ala Leu Ala Asp Ala Lys Gly Arg Lys Thr His Val Pro Tyr Arg
 290 295 300
 Asp Ser Lys Leu Thr Arg Leu Leu Lys Asp Ser Leu Gly Gly Asn Cys
 305 310 315 320
 Arg Thr Val Met Ile Ala Ala Ile Ser Pro Ser Ser Leu Thr Tyr Glu
 325 330 335
 Asp Thr Tyr Asn Thr Leu Lys Tyr Ala Asp Arg Ala Lys Glu Ile Arg
 340 345 350
 Leu Lys Gly Asn Ser Lys Leu Glu Gly Lys Pro Ile Pro Asn Pro Leu
 355 360 365

Leu Gly Leu Asp Ser Thr Arg Thr Gly His His His His His His
 370 375 380

<210> 6

<211> 1152

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: HsKip3a
 fragment

<220>

<223> Nucleotide sequence of HsKip3a fragment used in
 ATPase assay (Figure 5).

<400> 6

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catcaccatt ga 1152

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